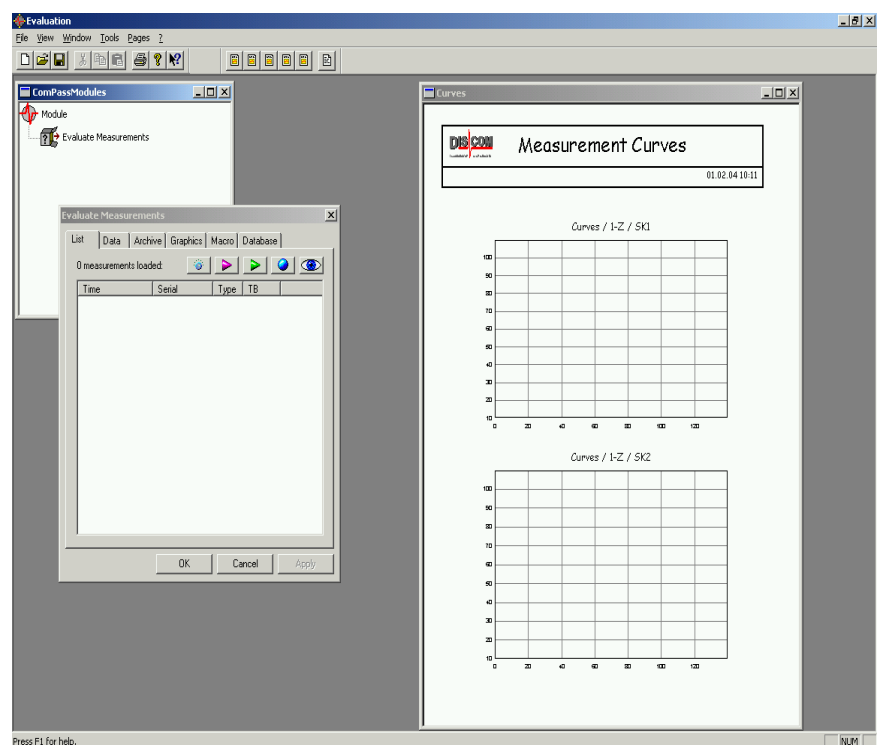


# Rotas Archive Evaluation

Discom GmbH, Göttingen, Germany



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# Archiving Acoustical Measurements

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## Introduction

The Rotas measurement program gives the opportunity to store test data. These data are stored in so called archives in a special file format. This file format allows to bundle different measurements and to store multiple single measurements in one archive file.

The complement of the archiving measurement program is the evaluation program, called „Presentation Tool“. This program reads archive files, displays and evaluates the content (measurement data). While the measurement program Rotas can only be started on a PC which is equipped with signal processor cards, the presentation tool is applicable on almost any PC. The presentation tool is based on the Discom application “Compass”.

Both programs, the Rotas measurement program and the Compass program have a modular structure. Their functions are carried out by modules, which are assembled followed the principle of a construction kit.

For the Rotas measurement program it means that the function „Archiving of measurements“ is fulfilled by one or two independant modules and not all Rotas applications include this function. The presentation itself consists of modules either, but here only one module serves the function “Read and Evaluate Data”. Other modules allow to display the data in different graphical figures.

---

# Organisation and Designation of Archives

The Rotas archiving function in the measurement program is carried out by two modules. One module is the “archive writer”. It collects the measurement data you want to archive and bundles it in an archive file. The second module is the “concatenator”, which assembles archive files created by the writer and sorts them according to different criteria.

Both modules allow a variety of options for archiving measurements:

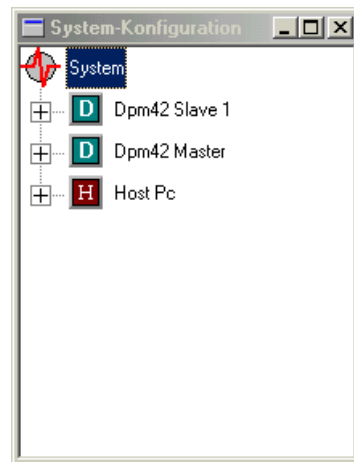
- **Numbered files:** every single test (test cycle) gets its own file. Files are automatically numbered (“Test\_001”, “Test\_002” etc.)
- **Serial numbers:** As for numbered files, each test gets its own file, but they are named after the serial number of the candidate. (This option naturally implies that the measurement program currently knows serial numbers.)
- **Several measurements per file:** As for numbered files, but here, each file contains e.g. 20 test runs and not only one.
- **Files are sorted according to Type / Day / Calendar Week:** The archive concatenator generates its own archive on the basis of the above mentioned criteria and assigns every measurement to the corresponding file. That way, all measurements of e.g. the same type can be bundled together.
- **Week Days:** The archive concatenator generates an archive for each week day (Monday, Tuesday, ...). After a week, the file from the previous week is deleted and a new one is created.

Archive names depend on the selected archiving and sorting method. All measurement archives have the same file extension “.rdt”.

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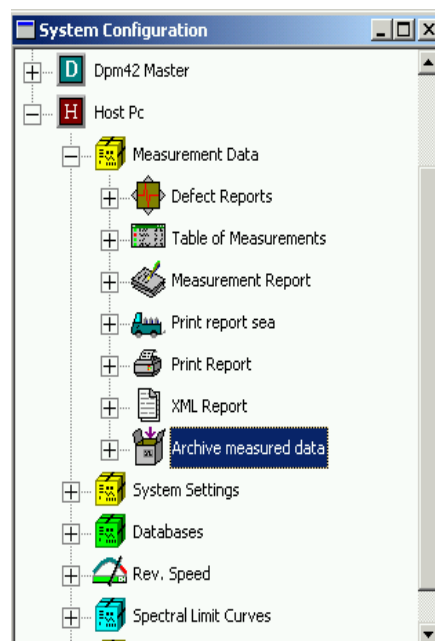
## Archive Settings in the Rotas Measurement Program

If you want to make settings for archives, open the window **System Configuration** first. It is normally covered by measurement display windows. If it has not been opened, go via the menu **File:New**. You will see a window like that:

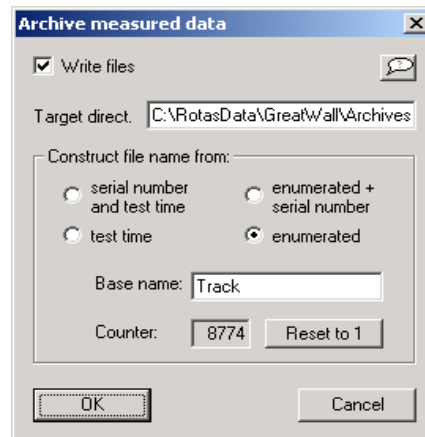


This window shows the module configuration of the Rotas application. The modules are organized in a tree, the so-called “system tree”. The module configuration and the system tree content differ between applications (depend on the real test application). In each case the application contains “Host Pc” as the lowest object entry. Click on the small + in front of the “H”-symbol to open the list of modules in the container “Host Pc”.

Now, search for the object “Archive measured data” among the modules in the “Host Pc” container and in its submodules. You may find it directly in the container Host. Otherwise, open further lists of submodules (click on +) to search for it. Most configurations have “Archive measured data” in the list of modules pertaining to “Measurement Data”:

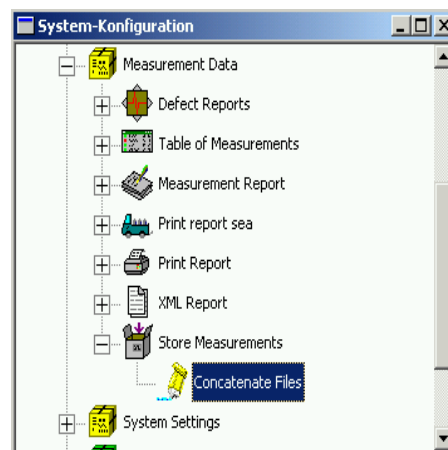


Doubleclick the symbol or the name to open the settings dialog for archiving:



The checkbox **Write Files** enables or disables the archiving function in general. Make sure the box is checked if you want to get an archive. You can enter the **Target directory** where you want the archive files to be stored, below.

Further options of this dialog are explained in the next section. Return first to the system tree (the dialog can be left open and moved to the side) and click on + belonging to the item “Archive measured data”. You will see the archive concatenator:

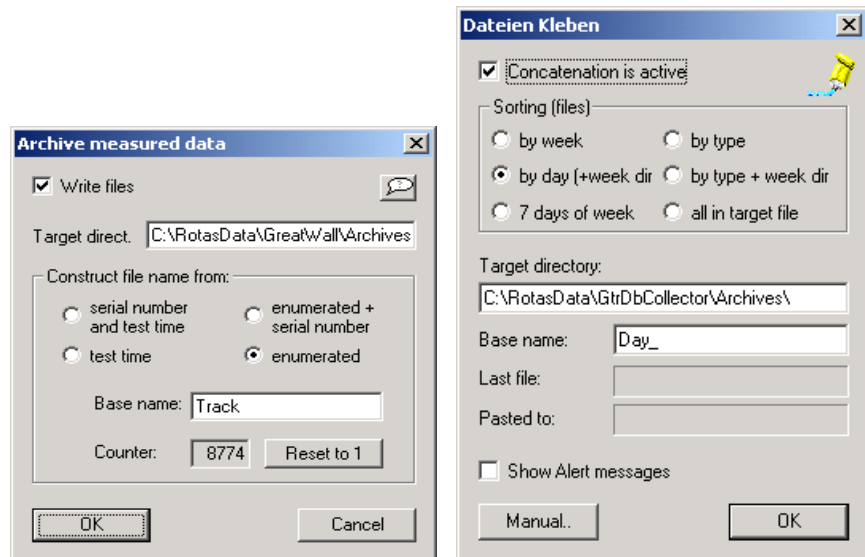


Doubleclick the name or the symbol to open the settings dialog. Settings options of the archive concatenator are explained in the following section as well.

---

## Selecting Archive Sorting

In the setting dialogs of the archive writer and the archive concatenator you set how the final archive files are named and sorted. (See the section “Organisation and Designation of Archiving” on page 2.)



left: Dialog of the Archive writer

right: Dialog of the Archive concatenator

Please note that both modules can be activated or deactivated independently of one another (by setting **Write Files** or **Concatenation is active**). If you deactivate the writer, no archives are generated. If you deactivate the concatenator, you will get the files which have been created by the writer. If the concatenator is active, it “glues” the files the writer created into sorted archives.

In both dialogs you have to enter a **Target Directory**. This is the directory where the archive files are stored. When the concatenator is running the writer generates only temporary files. Nevertheless, a valid directory must be entered where the writer can store these temporary files. It can be the same directory as for the concatenator.

Furthermore, you will need to give a **Base name** in both dialogs. The names of the archives are given by adding further specifications to the base name (e.g. the serial number).

### Archives without concatenator

If the concatenator is deactivated, there are several options for the files created by the writer: Numbered files, filenames including the serial number, filenames including the time stamp (the time when the test was started).

Check the **Numbered Files** box in the dialog. The files which are then created are named *Base name + counter number*, like *Track\_0001.rdt*, *Track\_0002.rdt*, *Track\_0003.rdt* etc. The numbers are 4-digit, that means after 10,000 measurements, the new ones will overwrite the previous ones, using the same name.

**Counter** displays the number which assigns the next or current test run. Reset counting to 0001 with the button **Reset to 1**.

As an alternative or in addition to a number, the serial number and/ or the time stamp can be included in the filename. If you want to use the serial number, the

test bench control of the measurement program must have access to a serial number. In general, the test bench transfers a serial number to the Rotas measurement program before finishing the test cycle. If you want, you can add the time stamp to the serial number (the time when the test was started). If you do so, repeated measurements of the same candidate result in different filenames. For example, a test of a candidate with the serial number AB678 at 11:57 will result in a file name `AB678_11-57.rdt`. (Actually, the filename contains a detailed time stamp, including year, month, day, hour, minute, second.) If you don't have access to a serial number, you can also use the basename and the time stamp alone.

Please note, that you will continuously get new files when you name with serial numbers or time stamp, and that previous measurements will never be overwritten. (Thus, different to numbered files, where the maximum archive number is 10000). In this way, you will never lose measurements, but you have to be careful that the PC hard drive does not fill up.

### **Archives with Concatenator**

The concatenator's task is to sort the single archive files created by the writer and add them to larger archive files. For example, if you have the concatenator sort by type, it will produce one archive for each candidate type which contains all measurements of candidates having that type.

The concatenator offers the following sorting methods:

**Sorting by Week:** Archives are named by calendar weeks, like *Base name + Week number* (like `Archive_13.rdt` for the 13<sup>th</sup> calendar week). All tests which have been carried out within one week are attached to the week file. After a year, all measurements are added to the first file, so that old archives are not overwritten. (Note: As per calendar, week no 1 is the first week of the year that begins with a Monday. The days before are officially part of week 53 of the previous year. However, the concatenator will count these days as week 0.)

**Sorting by Day:** Similar to weeks, but names are given by days (in a year). For example, all measurements of April 24, are filed in *Base name\_114.rdt* (or 115 in leap years). Here again, after a year, measurements are added to the file of the previous year.

**Sorting by Type:** Measurements are sorted by candidate types. The concatenator generates file names like *Base name\_Type designation.rdt* and attaches each measurement to the corresponding archive.

**Sorting by Type & Week:** The concatenator generates sub directories named by calendar weeks (see above sorting *by weeks*). In these week directories, archives are generated according to *Sorting by types*, see above.

**Sorting by Weekday:** The concatenator generates seven archives, which are named by weekdays: *Base name\_Monday.rdt*, *Base name\_Tuesday.rdt* etc. For example, all measurements of Wednesday are attached to the archive of Wednesday. After a week (next Wednesday), all previous measurements are deleted and a new archive file is being started. This way, you will always have the measurements of the last seven days, so you don't have to worry about filling up the hard disk and having to delete measurement files.

**All in Target File:** All measurements are attached to the archive *Base name.rdt*. You will get only one, probably very large file.



Note: If you activate the concatenator, no measurements (except for the option *Weekdays*) will get lost, however, you need to prevent accumulation of files by cleaning off your hard drive regularly.

### Further Options

The dialog of the archive writer has a button with a balloon icon in the upper right corner. If the button is pressed, the archiver emits messages about written archives in the window StdOut.

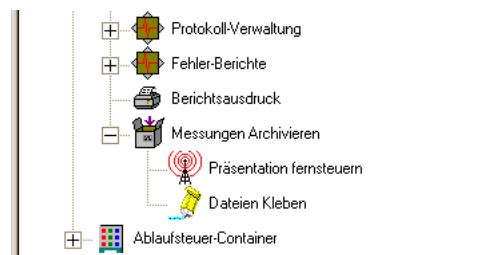
By selecting the option **Show Alert Messages** you will get the same function for the file concatenator. One side effect of this option is that when an error is encountered (like a write-protected file) a dialog opens which interrupts the Rotas program. This dialog is closed by clicking OK. You should activate “Show Alert Messages” only if you are working in the vicinity.

The concatenator’s activities are visible in the fields **Last File** and **Pasted to**. If the concatenator is deactivated and you want to sort previous measurements now, go via the **Manual...** button.

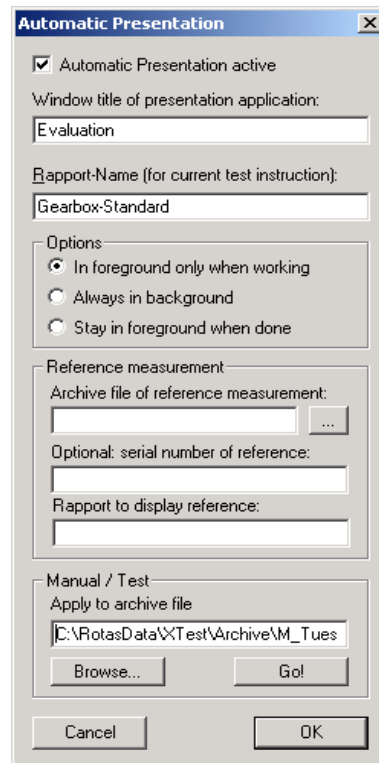
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## Automatic Presentation

You can remotely control the presentation program (which is described in the rest of the handbook) from within the Rotas measurement program. In this case, at the end of each measurement cycle the presentation program will be ordered to load the archive file containing the previous test cycle, display the containing data in a way which you have preselected and send it to the printer. (The exact moment of this function is after the writer has written the archive file and before the concatenator glues it.) You will find the module “Presentation Remote Control” controlling this function as submodule of the archive writer and sibling module of the concatenator:



You make the necessary settings in the setting dialog of this module:



First of all, you can activate or deactivate the automatic presentation with the check-box **Automatic Presentation active**.

If you activate automatic presentation, make sure that the presentation program is running. The measurement program is not capable of starting the presentation program. Only a running presentation program can be controlled remotely.

Enter in **Window title of presentation-application** the name from the title bar of the presentation program. The measurement program finds the presentation program using this title. If no window with this title can be found, no automatic presentation will be done and you will get an error message.

Enter in **Macro-Name** the name of the macro which shall be executed after the archive has been loaded. Macros will be explained in the second part of this manual.

You can test the remote control function by pressing the button **Go!**. Before you do this, enter a valid archive file in the area **Manual / Test** or select it via **Browse...**

Make sure that the correct printer has been defined as standard printer for windows. Normally, you can't use a printer on LPT1, since the measurement program communicates with the DPM42 signal processor cards via this port.

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## Store Additional Information in an Archive

The content of an archive is mostly automatically defined: all evaluable measurement data. In addition to that, start time of the test, candidate type, serial number, test bench ID and evaluation result of the test are stored. Furthermore, you can store additional informations like for example the name of the test operator. All information which is stored in Rotas' seas like Application sea, Candidate sea, Sps sea or Messages sea can be stored in an archive.

Enable this function by adding a list of the following form to the Rotas'

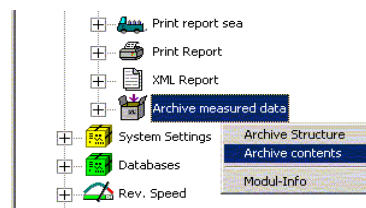
Application sea:

```
AdditionalArchiveInfos: {  
    Pruefer      Application  
    WheelRName  Candidate  
}
```

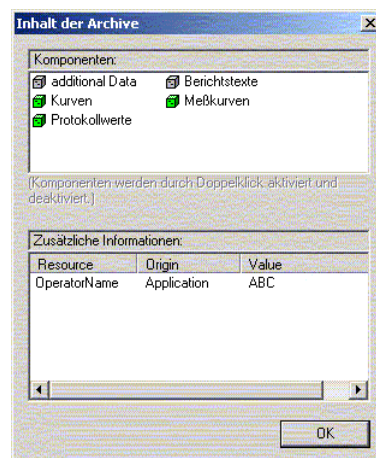
Every line of the list contains two entries. The first one defines the name of a resource in the Rotas' sea defined by the second entry. In the example shown above, a resource named „Pruefer:“ in the Application sea and a resource „WheelRName:“ in the Candidate sea would be read and their values copied into the archive. The presentation can read this information then.

Resources from the Candidate sea are important since their origin can be the parameter database.

The archive writer allows to display the actual values of the additional archive informations. Right click on the archive writer module to open its context menu. Select **Archive contents**:



The archive contents dialog opens. You see the components of the archive in the upper part. (They reappear as chapters in the content list of the archive later.)



In the lower part, the additional archive informations are listed. If you open this dialog after a measurement has been made, you can see the current values as well.

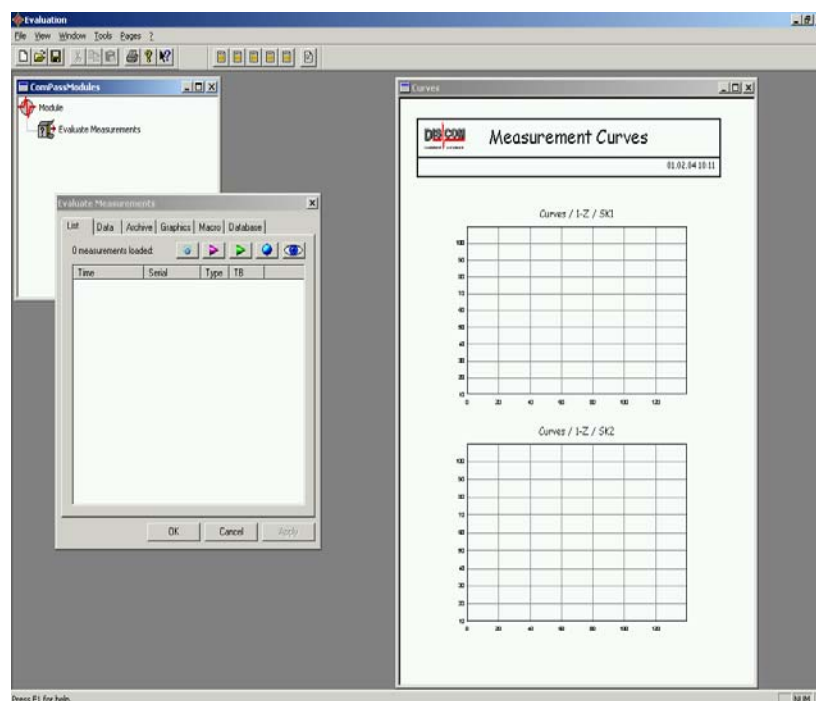
# Evaluation of acoustical measurements

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## The Evaluation Program

In general, the evaluation program is named „Presentation Tool“ and you find it in a subdirectory of C:\RotasData\ or in a subdirectory of the current measurement application. Some systems provide a desktop link to open the presentation program.

If you start the presentation, you may see the following figure:



Maybe not all windows shown above have been opened or other additional windows have been opened, also. The different windows have the following functions:

In the top left corner of the figure, you see a window „ComPass Modules“. This is the system tree window of the application similar to the system configuration window of the measurement program (see “Archive Settings in the Rotas Measurement Program” on page 3) The large dialog **Evaluate**

**Measurements** on the left hand side is the control window for the presentation. You select archive files and measurements to evaluate here. On the right hand side you see an example for a presentation window. These windows visualize the data. The usage of the graphic elements that display data in these windows is described in a separate manual “Presentation display”.

If the dialog **Evaluate Measurements** has not been opened, you can open it by doubleclicking the module „Messungen Auswerten“ in the system tree.

If the system tree has not been opened either, you can open it via the menu **File:New**.

You can open a selection of some presentation windows with toolbar buttons below the menu bar:



Each button opens one presentation window. The rightmost button opens all windows.

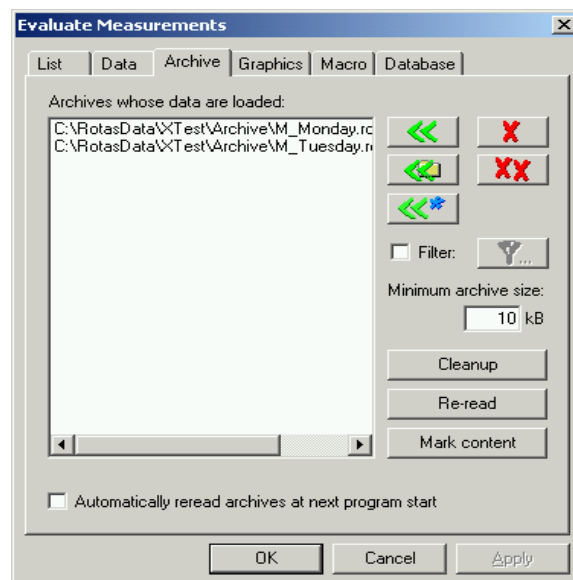
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## The Presentation's Control Dialog

The control dialog contains several sections which deal with different tasks for displaying and evaluating measurements.

### Section „Archive“

In the section Archive, you deal with the archive files. The presentation allows to work with more than one archive file at the same time.



Click on  to load one archive file. The content of the archive file is being analysed during load. This can take some time, especially with large archives. (You will see a progress bar). The button  allows to load all archive files in a folder with one mouse-click. If you want to unload an archive, select it in the list and click the button . The button  unloads all loaded archives.

You can delete single measurements from archives using the list of measurements in the section **List** (see below). After doing this, you should use the button **Cleanup** to reorder the archive file. It will be removed from the list at the same time.

It is harmless to open an archive while the concatenator of the measurement program adds data to it. Only the new data won't be added to the list automatically. Press **Re-read** to update the list.


If you select an archive file and click **Mark content**, the corresponding measurements will be marked in the section **List** (see below).

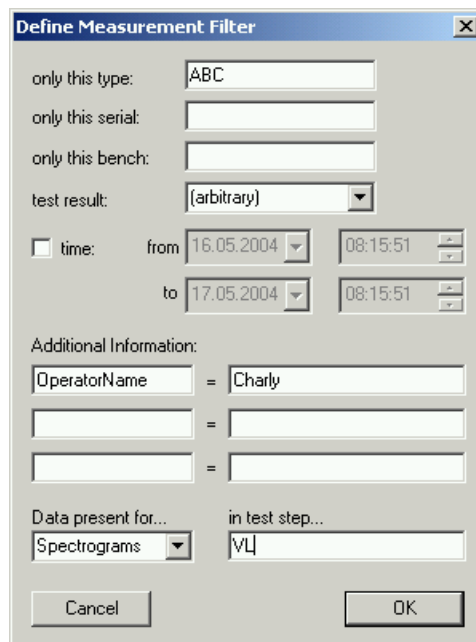
If you activate the option **Automatically reread archives at next program start** all archives which have been loaded when closing the presentation program will be re-loaded and analysed immediately on start of the presentation program.

### ***Filter-Functions for Loading Archives***

If you have archives or folders containing many measurements, you may not want to load all data every time, since the analyzing process on load takes some time. Thus, you have the opportunity to use a filter and load only the measurements you want to evaluate.

You can either define a filter which is used automatically on load of every archive file, or use the function „Load Preselection“ (see below).

Defining a global filter is done by activating the check box **Filter** next to the button  which you have to press next. You see the filter dialog:




The dialog box is titled "Define Measurement Filter". It contains several input fields and checkboxes. The "only this type:" field has "ABC" entered. The "only this serial:" and "only this bench:" fields are empty. The "test result:" dropdown menu is set to "(arbitrary)". There is a checkbox for "time:" which is unchecked. Below it, the "from" date is "16.05.2004" and the "to" date is "17.05.2004", both with time set to "08:15:51". Under "Additional Information:", there are three rows of "field = value" pairs. The first row has "OperatorName" = "Charly". The second and third rows are empty. At the bottom, there are two dropdown menus: "Data present for..." set to "Spectrograms" and "in test step..." set to "VL". There are "Cancel" and "OK" buttons at the bottom.

Enter here, which measurements you want to load. In the figure shown above only measurements of candidates of the type "ABC" will be loaded where an additional information "OperatorName" exists and has the value "Charly" and which contain spectrograms in test section "VL". Leave those fields blank where you don't want to make a selection (like the serial number and the test bench in the figure) and disable the check in front of **time**, if you don't want to use this criterium.

From now on only those measurements will be loaded from the archives which match the filter criteria above until you disable the control box **Filter** (or change the filter criteria).

The criterium **Minimum archive size** is used anytime, even if you have disabled the filter. For this reason, you find it on the **Archive** page directly. If you want to disable the minimum file size check, set the value to 0.

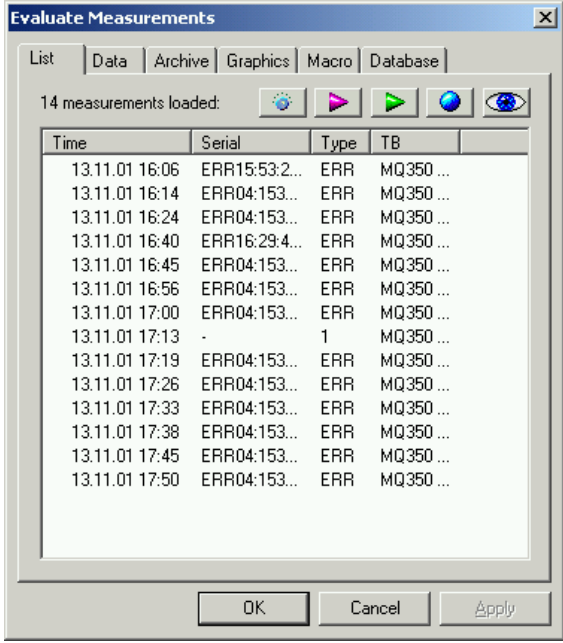
### Load Preselection

Press the button . You get the normal file select dialog first where you can select one or more archives. But these archive files will not be loaded and analysed automatically. Instead, you will see a list of all measurements in that archive (similar to the list in the section **List**). In this list, select the measurements you want to load by mouse-click. You can sort it by clicking the column headings to simplify the selection of likewise measurements (e.g. same type). After pressing **OK** only the selected measurements will be loaded.

Remember: Measurements which have already been loaded are not displayed in the preselection list.

## Section „List“

In this section, every single test cycle from the loaded archives is listed:

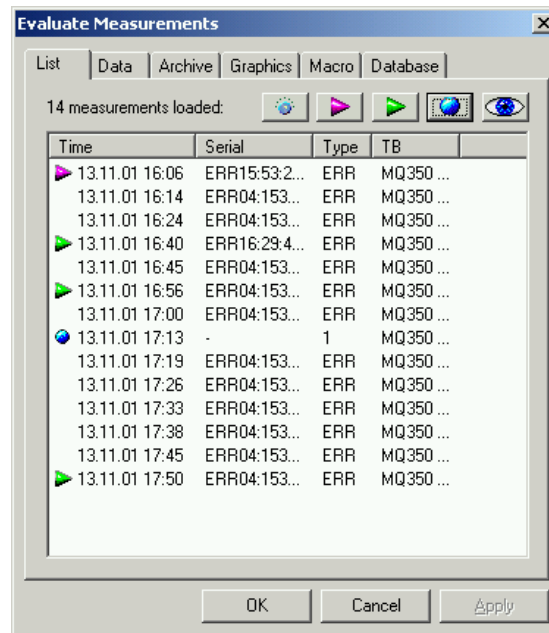


Time	Serial	Type	TB
13.11.01 16:06	ERR15:53:2...	ERR	MQ350 ...
13.11.01 16:14	ERR04:153...	ERR	MQ350 ...
13.11.01 16:24	ERR04:153...	ERR	MQ350 ...
13.11.01 16:40	ERR16:29:4...	ERR	MQ350 ...
13.11.01 16:45	ERR04:153...	ERR	MQ350 ...
13.11.01 16:56	ERR04:153...	ERR	MQ350 ...
13.11.01 17:00	ERR04:153...	ERR	MQ350 ...
13.11.01 17:13	-	1	MQ350 ...
13.11.01 17:19	ERR04:153...	ERR	MQ350 ...
13.11.01 17:26	ERR04:153...	ERR	MQ350 ...
13.11.01 17:33	ERR04:153...	ERR	MQ350 ...
13.11.01 17:38	ERR04:153...	ERR	MQ350 ...
13.11.01 17:45	ERR04:153...	ERR	MQ350 ...
13.11.01 17:50	ERR04:153...	ERR	MQ350 ...

The list displays the „General Information“ of each test run, being: Start Time, Serial, Type and Test Bench. You can sort the measurements by clicking on the heading of a category.

You can *mark* measurements in this list and you can make a measurement *prominent*. The data (curves) of marked and prominent measurements will be drawn with different colors. There is one difference between marking and making prominent: You can *mark* multiple measurements, but only one measurement can be made *prominent*.

If you want to mark a measurement, select it in the list and press the button with the green arrow. The selected measurements are marked in the list with the same symbol:



You have two colors available to mark measurements. In the section **List** they are distinguished as „green“ and „pink“. The colors used for the graphics can be changed in the section **Graphics**.

You make a measurement prominent by pressing the button with the blue ball. As expected, the measurement is marked in the list with the same symbol.

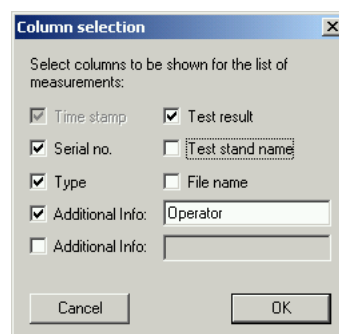
You remove a selection (marking and making prominent) by pressing the corresponding button (arrow or ball) another time.

If you double click a measurement in the list, this measurement is treated with the same action you carried out last. Thus, if you used the pink button for marking last, the pink marking is used once again.

In addition to the already mentioned buttons, you find a button with an eye in the top right corner of the dialog. Pressing this button redraws the data selected in the contents list of the section **data** (see below). You will see later what that means and which further function the section **list** allows.

### Selecting the Columns of the List

You can select, which columns the **list** shall display. Press the button  to open the corresponding settings dialog:



Select which information shall be included as a column. You can also use „Additional Information“ as columns. You only have to enter the name of the information as shown in the figure.

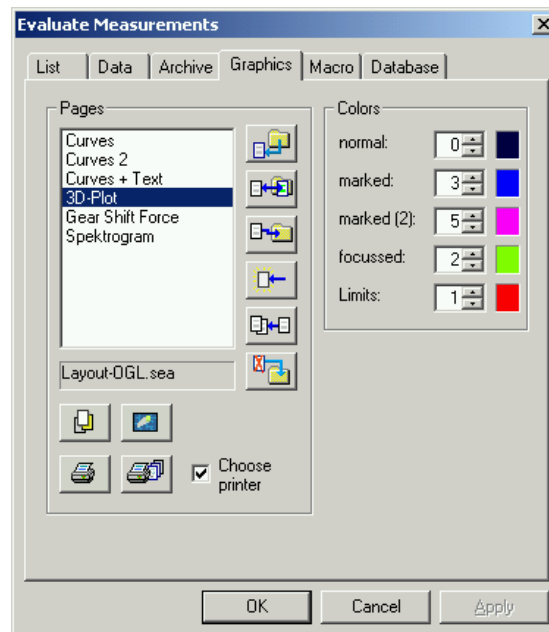


## Section „Data“

You will find the „content list“ of the measurements in this section. You assign data to graphic elements here. The section Data allows a wide range of functions which are explained beginning on page 18.

## Section „Graphics“

The section **Graphics** holds the list of graphic pages. You also select the colors for marking and making prominent here.



On the left you see the list of the available graphic pages or „layouts“. Double click on an entry to open the corresponding page or get it to the front.

Each layout is stored in a separate file. This file contains information, where on the layout each graphic element has been placed, including page headings or logo graphics. (The *contents* – the data - of the graphic elements is not stored in this layout file but is assigned to at runtime.) In the text field below the list, the current file name is being displayed.

You can manage the layout pages with the buttons right of the list. The topmost button loads another layout into the list. Further details about the management of layouts can be found in “Managing Layout Pages” on page 26.

The buttons below the list hold the following functions:



„**To the front**“: The layout page selected in the list will be brought to the front. (If it has not been opened, it will be opened.)



„**Wipe page**“: All data (measurement curves, etc.) in the graphic elements of the selected page will be “wiped out”.



„**Print page**“: The selected page will be sent to the printer (assuming automatic printing is enabled for this page, see “Printing Graphics” on page 26).



**„Print all pages“:** All open layout pages will be sent to the printer at once.

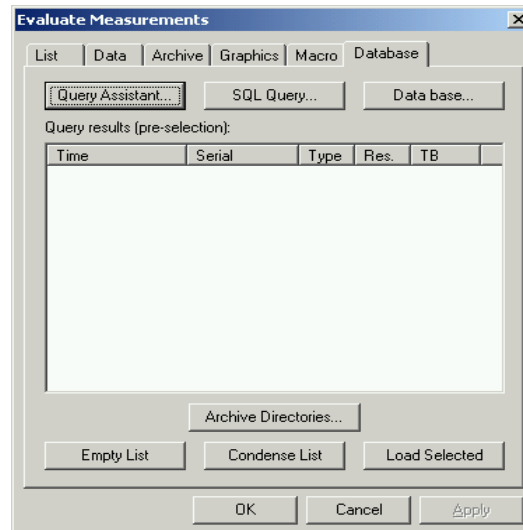
**Select printer:** If this checkbox has been checked, the usual windows printer dialog opens if you press one of the „Print“ buttons. This means, you can select a printer and make further printer settings. If **Select printer** has been disabled, the current standard windows printer will be used without hesitation.

On the right, you define the colors which are used for marked and prominent curves on the graphic pages.

## Section „Database“

This section can be made visible or invisible by right clicking the module „Evaluate measurements“ in the system tree and selecting the entry **View SQL-page**.

The section **Database** allows to load measurements from a connected SQL-Server database. Measurements which have been loaded from a database are added to those loaded directly from archive files in the section **List**.



This section holds its own list similar to that in the section **List**. The list here is meant as a *preselection* list. Via a SQL-Query (which is either entered directly or constructed using the assistant), this list is filled with references to measurements in the database. Since the actual load of the measurement data takes some time (especially if you load via a network connection) and since a SQL-Query can produce a huge amount of measurements easily, the method of preselection is used here. Select only those measurements in the preselection list whose data you really want to evaluate and press the button **Load selected**. The selected measurements are being loaded and added to the list in the section **List**. With **Condense list** you can remove all measurements from the preselection list, whose data have already been loaded.

The button **Query-Assistent...** opens a dialog which looks like the filter dialog of the section Archive (see page 12) and which simplifies the selection of measurements. The button **SQL-Query...** opens a dialog where you can enter the text of the `WHERE`-part of a SQL Query directly to specify the desired measurements. This dialog allows to copy the time span setting from the assistant window instead of entering it in SQL-language. With the button **Database...** you can control which database the program shall use as data source

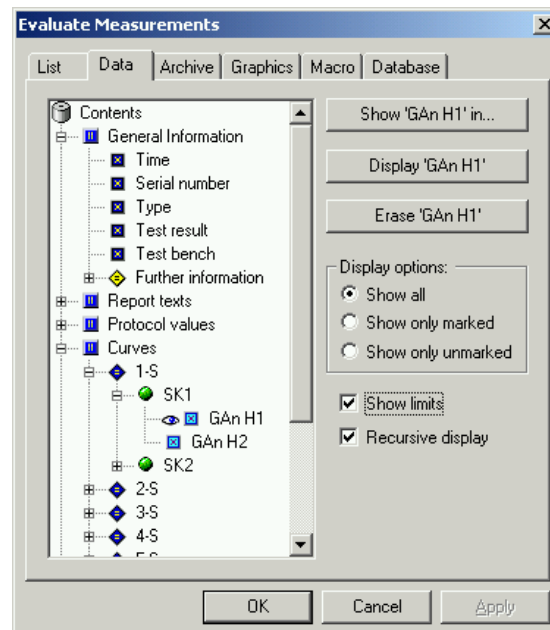
## Section „Macro“

A „macro“ is a recorded sequence of display actions which can be played-back like a script. That way, you can run an automatic script to execute actions which you normally execute manually. See the section “Macros” beginning at page 33 for further details.

---

## Displaying Measurements

Open the tab section Data. This is the main section to control the creation of graphics and evaluations.



The tree structure on the left hand side is the contents of the data. The data are ordered in different main sections (the first level of the hierarchy), like the chapters of a book. You will always find the chapter “General Information”. It contains general informations about the measurement. You have already seen this information in the section **List**. Whether there are other chapters depend on the presence of other data in the archive file. The chapter “Curves” for example contains order (or other value) tracks over speed. The chapter “Report Values” contains single values which are measured and evaluated separately. And the chapter “Report texts” contains the texts which the measurement program had been generating, including defect data (if a defect had been found).

Within each chapter, you normally find other subchapters which arrange the data for example respecting test modes (gears/ramps) and processing channels. Click on the + symbol in front of an entry to open the subchapters. At the bottom of the structure are the data entries. You can identify them by the fact that no + symbol stands in front of them.

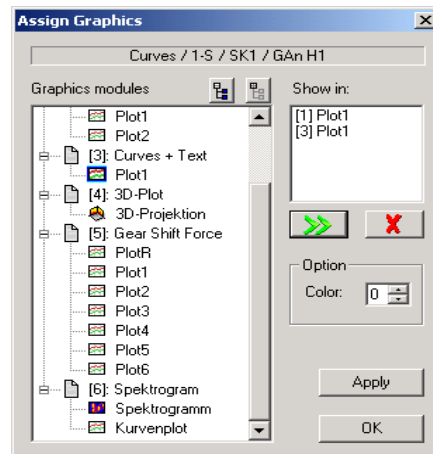
The basic method for evaluation is simple. You assign a data entry from the contents tree to a graphic object (e.g. a curve plot) of a presentation window. Then you press the button in the top left corner labeled **Display XYZ** (while XYZ is replaced by the name of the current data object which you have selected from the contents tree) and the graphic object will display the data. Further details of this procedure will be focused in the following paragraphs. **Erase XYZ** removes curves which have been assigned to a graphic object before. That way you can clean an evaluation page for a new evaluation.

Below the buttons you can select additional options.

## Assigning a graphic object

Before you can see the data of an data entry, you have to select which graphic object on which layout window (on which graphic page) shall display the data. Click through the contents tree until you found and selected the data entry you want to display. Most of the time, the button **Display Xyz** will stay grayed. It gets active only if you activate a data entry in the contents tree which has been assigned to a graphic object or if you have just assigned it to a graphic object.

Press the button **Show Xyz in...** to open the dialog where you can assign data to graphic objects.



In the text field above you see the name of the data object which you currently assign to a graphic object (in the figure above it's „Curves / 1-S / SK1 / GAn H1“). On the left, you see the different available graphic objects. The objects are ordered by pages (= layout windows). Depending on the type of data (measurement curves, single values, text) which you want to assign, different selections of graphic objects are offered.

You see two little help buttons over the tree of graphic modules. The right button reduces the tree completely, making it easier to find a special page. The left button re-opens the tree.

You can assign a data entry to more than one graphic object at the same time. For this reason, you see a list of graphic objects on the right hand side, which have currently been assigned to the data object. (You can also assign different data objects to one graphic object but this is irrelevant concerning the assignment procedure.) The list on the right shows in brackets the page number first, then the name of the graphic object as shown in the list on the left.

You assign data to a graphic object by clicking on it in the list and pressing the button **>>** afterwards. Alternatively, you can also make a double click on the module in the list. If you want to remove an assignment, select the object in the list on the right and press the red **X**.

In case of measurement curves and bar graphs you can also assign a color index for the curves/ bars in the bottom right area **Option**. Each color index stands for a curve color. You find further information about curve colors in the manual about the presentation display.

If you select color index 0 (as shown above), the color of the curves depend on the color you selected for a normal, marked or prominent measurement in the tab section **Graphics**. If you select a different color index, this color is used disregarding marking or making prominent.

## Displaying data

After you assigned a data entry to one or more graphic objects, you can display its data by pressing **Display Xyz...**. The name of the button always shows for which data entry the action is carried out.

You can alternatively doubleclick on the entry in the contents tree instead of pressing the button **Display Xyz...**. If no graphic object has been assigned to this data entry, the dialog where you can assign a graphic object will open automatically (see chapter above). Furthermore, you can right click on an object in the contents tree. A context menu opens which contains the function „Display“ and „Show in...“ either.

Remember that you may need to adjust scaling of the graphic module in order to see a graphic. To do this, open the property dialog of the graphic module with a right click on the graphic module and select **Properties...** from the context menu. The tab section **Scaling** allows to adjust the data interval which is being displayed. For further details, see the manual about the presentation display.

### **Marked measurements**

On the right side of the tab section **Data**, you can select what to do with the marked measurements of the tab section **List**. If you select **display all** as **display option**, all measurements are being displayed – marked and unmarked as well. The marked measurements are drawn in their corresponding color. If you select the option **only marked**, the unmarked measurements are excluded from the display. If you select the option **only unmarked**, it's vice versa: The marked measurements are being excluded.

### **Recursively Displaying Measurements**

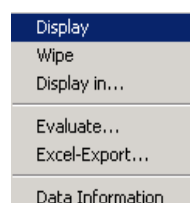
In the tab section **Data**, you can find the option **display recursively**. If you enable this option, you can display many data with one mouse click. Click on a branch anywhere above a data entry in the contents tree, for example the entry “Curves”. The display button is now labeled **Display Curves**. If you press the button, all data entries below the selected branch in the contents tree are being displayed. (This operation may take some time.)

### **Erase data**

If you have already displayed data in graphic objects, you surely want to erase them first, before displaying new data. If you want to do this, select the data entry in the contents tree (or a branch above that entry) and press the button **Erase Xyz** (where “Xyz“ replaces the current name of the data entry or branch). That way all curves in the graphics are being removed.

### **The Pop-Up Menu of the Contents Tree**

If you click on a branch in the contents tree with the right mouse button, a pop-up menu opens:



The first three entries **Display**, **Erase** and **Show in...** have the same function as the three buttons mentioned above. The function **Evaluate...** is being explained in the next chapter. The button **Excel-Export...** writes the data of that branch to a file. The file has a format which can be read by the Excel program (csv-Format). **Data-Information** shows you, how many data entries are below that branch (how many curves, etc you get when you show the data of that branch).

### **Displaying Limit Value and Mean Value**

The limit value that has been valid for evaluation in the measurement program is being stored in the archive files, too. If you enable the option **Show limits**, the limits (in particular those of tracking curves and spectra) are being displayed as well.

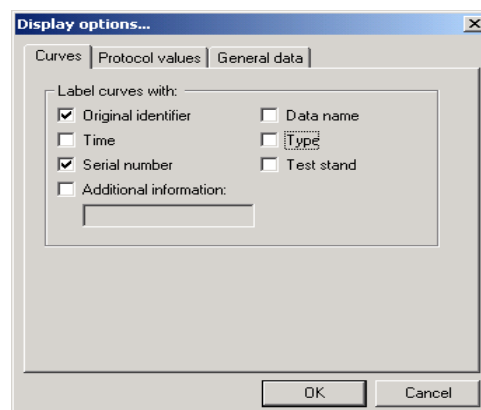
If you focus on the distribution of tracking curves and spectra, the mean value and the standard deviation is also relevant. To evaluate these values, proceed as follows:

Select the data entry of a tracking curve or a spectrum in the contents tree. First of all, **display** the data. Then do a right click on the data entry to open the pop-up menu. You will find the menu entry **Evaluate...** there (see above).

Clicking on this menu item opens a dialog where you can select colors for the mean value curve and the curve “mean value + *factor* x standard deviation”. Furthermore, you can enter the *factor* for the formula. After that, the graphic object displays the mean value curve and the curve „mean value + *factor* x standard deviation“, also.

## **Further Display Options**

Some details of the display can be influenced via several options dialogs. You open these dialogs by right clicking on one of the „chapter“ branches of the contents tree. Within the pop-up menu, you will find a menu item **Display options...** (instead of **Evaluate...**). Selecting this entry opens the dialog with the display options:



This dialog has different sections for the different types of data. In the section **Curves**, you can select which information is used to form the automatic captions of a curve plot. (For further details about captions, see the manual of the presentation display). The **Original identifier** is the name of the curve which has been stored in the data. **Data-name** refers to the name of the branch in the contents tree.

The section **Report values** holds the options for the display of single report values.

A text field can display the values, limit values, etc of all measurements in the list. You can select which entries are being displayed with a set of check boxes. A bar graph can display a single value only. This can either be the value of the prominent measurement in the **List** (or the one of the first measurement, if no selection has been made) or the mean value of all measurements.

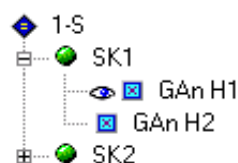
For the display of **General data**, you can choose whether to have a leading label (e.g. the word „Serial“) for each entry in the output.

If you order the labels, you can have them written **on top of one another**. The result are two rows: the first one containing the label, the second one containing the value.

In this section of the dialog, there is also an option controlling the form of output for **Report texts** (long report text, short report text, defect report). If you select **Display all together**, the report texts of all measurements are written in one text field one after the other. If this option is disabled, you only see the text of the prominent (the first) measurement.

## The Active Item

If you click on an item in the contents tree of the tab section **Data** (e.g. to display data), this item is marked with a small symbol in form of an eye in front of it. This is the marking for the *active item*.





The name of this item is copied to the buttons **Display Xyz...**, **Show Xyz in...** and **Erase Xyz** at the place of *Xyz*. The program remebers this active item (as far as possible). If you click the eye button in the tab section **List** or change the selection in the list, etc. the active item and all its sub-items are displayed anew. If you mark entries of the list and no curve in the display changes its color, check whether the right item of the contents tree has been selected as active item.

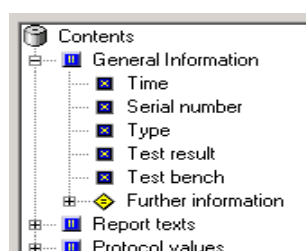
---

## Complete the Display

The presentation windows represent one printer page. The presentation display has been designed and optimized for print-outs. You can print a presentation window easily via the menu **File:Print**.

If you want to create a complete report that way, the printed page should contain some general data like type of the tested candidate or serial number.

The entries in the contents tree for these general data are data entries as well:



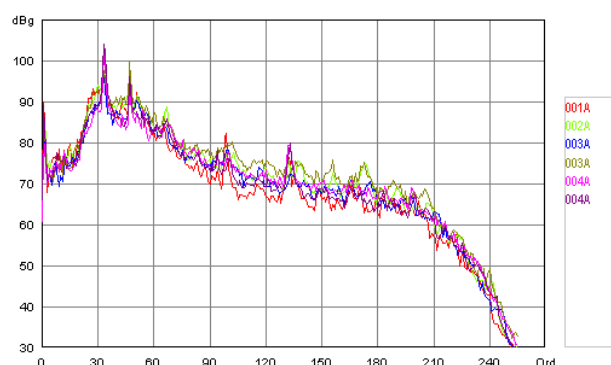
You can assign these entries to graphic objects displaying texts in the same way as you assign other data entries to a curve plot. If you press **Display**, you will see for example the serial numbers listed in the text field.

But you can also assign a higher branch of the contents tree (e.g. an item representing a test mode) to a text field. It will then display the name of the branch (e.g. the name of the test mode). If your layout page has a text field to display a heading, you can assign the name of the branch to this text field and data entries below that branch to other graphic elements. As a result, you can fill the whole layout page with data including the heading while doing only one mouse double-click on the branch item (e.g. the name of the test mode).

See the manual of the presentation display for information about how to create new graphic elements on a layout page or how to change position and size of graphic elements. Furthermore, you find more detailed information about the usage of a curve plot and of other graphic objects.

## Colored Curves

If you want to compare data of different measurements, it is helpful to display different curves with different colors:



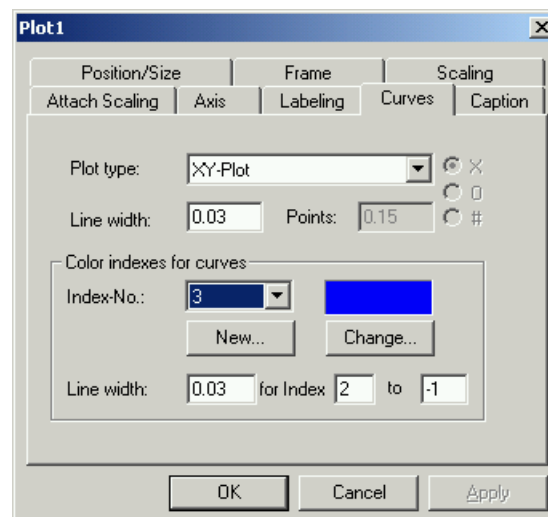
For the display shown in the figure above, you need a curve plot and a legend module. (See the manual of the presentation display for information about how to create these graphic objects.

Now select the data entry holding the curves for the colored curves (see “Displaying Measurements” on page 18). Open the dialog to assign the graphic object (see. “Assigning a graphic object” on Page 19). Enter in the dialog **Assigning graphics** the value -1 as **color option**. That way, you define that the curves of this data entry shall not get the same color, but each one shall get a different color. Display the contents of this data entry (see “Displaying data” on page 20) and see the result.

You still need the colored captions to identify the curves. Double-click on the curve plot to open its property dialog. Open the tab section **Captions** and refer to the manual of the presentation display to connect the curve plot with the text legend.

The text legend displays only the names of the curves at first. Open the context menu of one of the chapter branches of the contents tree and select **Display options** (siehe “Further Display Options” on page 21). The section **Curves** defines which information identify the curves in the legend.

The colors for the curves and the captions are defined within the presentation display. See that manual for details. You have to open the property dialog of any curve plot and open the tab section **Curves**:



You can define the colors in the lower part of that dialog. Each color is assigned to an index number. The colored display uses index 1 for the first curve, index 2 for the second curve, etc. If you display more curves than color indexes defined, the last curves are drawn with color index No. 0.

Be aware: The colored curve display shows all curves of the selected data entry. The element „Serial Number“ displays all serial numbers. If you don’t have a curve for each measurement (= serial number) you may get an inconsistency regarding color and caption. So, you should make sure that you have as much captions as curves.


---

## Printing Graphics

Activate a layout window (by clicking on it) and select the item **File:Print...** from the application menu. The normal printer dialog opens and you can send the layout page to a printer as usual.

As an alternative, you can click with the right mouse button on a layout window and select **Print window** from the context menu. The printer dialog opens as well.

For the other ways to a piece of printed paper, you have to define a standard printer. If you have not defined a standard printer for the application via the menu **File:Printer Setup**, the standard windows printer is used.

Open the tab section **Graphics**, select the page you want to print and press the button  **Print page**. Then this page is sent to the standard printer – but only if you enabled *automatic printing* for this layout page. You can do this via the context menu of the layout page by activating the item **print automatically**.

If you have created a macro including a print command, you have to ensure automatic printing either. Then the page is sent to the standard printer as well.

---

## Managing Layout Pages

The tab section graphics of the control dialog shows the list of the currently loaded graphic pages or „layouts“. A layout holds all information about the the graphic objects (E.g. curve plots, titles or company symbols) of a (print) page, especially their position and their hierarchy. Some of these objects are filled with data later, others remain unchanged.

You can use a number of layouts at the same time. All these layouts are included in the list of loaded graphic pages. That way, you can use a layout with two curve plots, with six curve plots and one with a large text box at the same time.

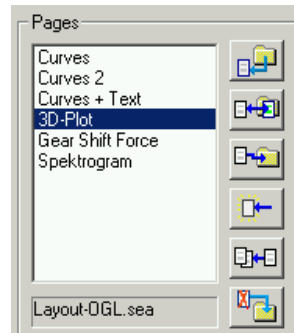
You can make some settings for the graphic objects of a layout page, influencing their appearance. You can change colors, fonts and scaling settings but you can also change the text of titles. All changes are saved automatically when you end the presentation program.

Maybe you want to use a layout with 6 plots in two different scaling contexts: The first context uses a scaling of 0 to 100, the other context uses a scaling of 500 to 4500 with a different title. You could invent two layouts in the list but this may result in many layouts filling your list. As an alternative, you can use layout *variants*.

Each variant of a layout is stored in a separate file (you could create subdirectories, where you store all variants of a layout) but the program identifies them as variants of the same layout. Use the function **Change variant** to load a different variant for a loaded layout. That way, your list stays easy to survey.

The advantage of layout variants compared to two „parallel“ layouts is that graphic assignments remain unchanged. If you assigned data (e.g. the spectra of the 1.gear) to a graphic object in a layout, this assignment works for all variants

of this layout. A disadvantage is that you can only use one variant at the same time.



Next to the list of the loaded layout pages, you find the buttons to manage layouts and their variants.



**Load a layout file:** This button loads another layout into the list. You cannot add a variant of a layout already loaded. If you want to change the variant of a layout, use the corresponding function (see below). If you want to use a variant as a separate layout, you have to make a copy of the original first (see above).



**Change a layout-variant:** Select a page in the list and press this button to load another variant of the selected page. The textfield below the list shows the file name of the currently loaded variant.



**Save layout (variante) as:** This function creates new layouts or new layout variants. The current state of the selected layout will be stored in a new file with a new filename. You can switch between the different variants afterwards.



**New (empty) layout:** Pressing this button creates a new, completely empty layout (a blank page). You have to place graphic objects on this page then. You will be asked for the name of the new layout. The name must be different to already loaded pages, obviously.



**Copy a layout:** Pressing this button creates a new layout as well. Here, it will be a copy of the layout selected in the list.



**Remove a layout from the list:** The selected layout is being removed from the list of loaded pages. The current state of the graphic objects will be stored.

## Hints to Manage Layouts

Classify layout files: If you create multiple variants of the same layout, you should store all these files in a single subdirectory. You can rearrange the files later still. Nevertheless, a file which is currently used by the program (a loaded layout) cannot be moved.

Make a variant to an independent (parallel) layout: You have two variants of a layout and want to use them simultaneously from now on. (That means that you want to fill them both with data at the same time.) Then load one variant, make a copy then change to the other variant.

Management of layouts in a macro: You can only record the command „Change layout variant” in a macro. (Naturally, the commands “activate layout“, „erase page“ and „print page” are available for macros as well.)

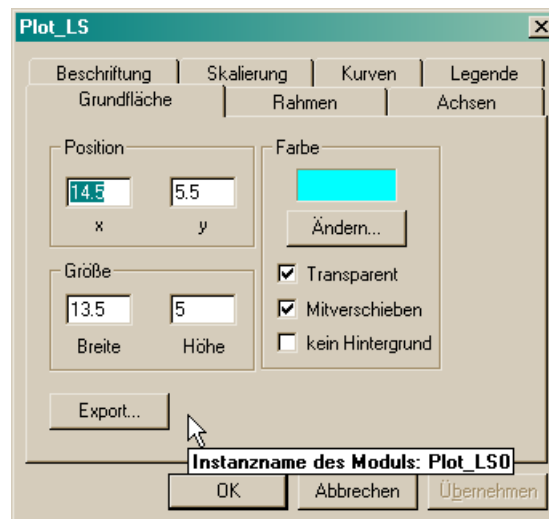
## Names and Instance Names

Each layout and each graphic module within a layout has a name. You see these names for example in the layout list of the tab section Graphic or in the dialog where you assign a graphic. The names are called “User names”, since they are meant to be shown to the user.

But each layout and each graphic module has a hidden “real name”, the so called *instance name*. This name is used internally by the presentation program, because it is guaranteed that this name is unique within a layout page. (You can have for example two textboxes on a layout page having the (user) name “Plot Title”, but behind the scenes their instance names are different.)

Sometimes, you need the instance name (e.g. to edit a macro, see page 33). You can inquire the property dialog of a module for this name. Open the dialog and move the mouse pointer near the button **Export** on the tab section

**Position/Size:**

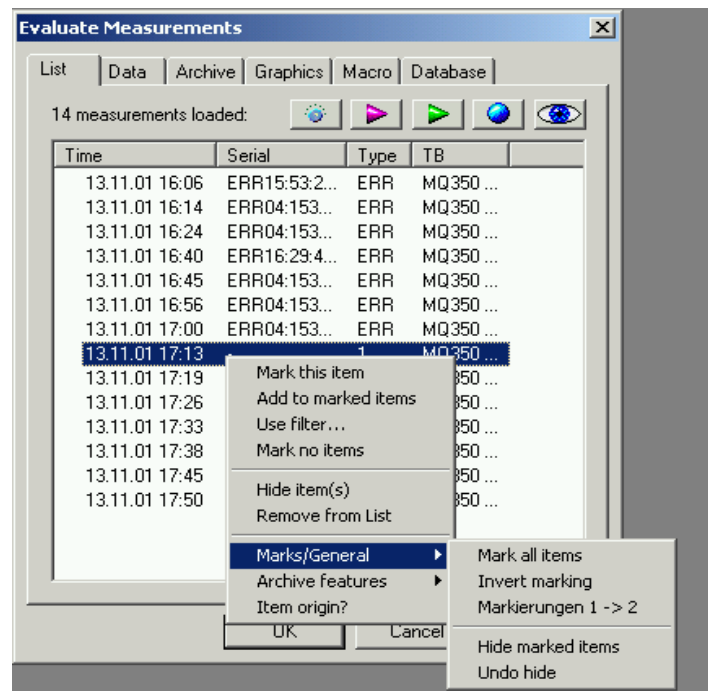


A small info window will pop up, revealing the instance name.

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## How to work with the list of measurements

In the tab section **List**, you can open a pop-up menu by right clicking on an entry in the list of the loaded measurements:



This menu gives access to a wide range of additional functions.

The menu entry at the bottom **Item origin?** reveals, from which archive file the marked measurement has been loaded.

### Marking of Measurements

The topmost four menu commands deal with the marking of measurements. (see “Section „List“” on page 13 ff). Select **Mark this item**, to mark all currently selected list entries. **Add to marked items** adds more measurements to the currently marked measurements. **Use filter...** allows to mark all measurements fulfilling certain requirements. (e.g. all measurements of a certain candidate type). The possibilities of the filter are the same as those described below “Filter-Functions for Loading Archive” on page 12. With the menu entry **Mark no items** you can finally erase all markings

Further down, in the sub menu **Marks/General** (see figure), you find additional commands for markings. **Mark all items** marks (surprise) all measurements of the list. If you load more archives now, the measurements from these archives will not be marked. **Invert marking** removes all markings from the currently marked measurements and marks all currently unmarked measurements. **Markierungen 1 -> 2** switches all currently green marked measurements to violet marked measurements.

In the tab section **Archive** in the bottom right corner, you find the button **Mark content**. Select an entry in the archive list and press **Mark content**. That way, all measurements from that archive are marked in the measurement list.

## Excluding Measurements

You can exclude measurements from the list. These measurements become “invisible”: They disappear from the list and the data are not displayed any more. Select the menu command **Hide marked items** to remove the currently selected measurement(s) from the list, including the measurement where you opened the pop up menu.

The submenu **Marks/General** holds the command **Hide marked items**. You exclude all marked measurements that way. In combination with the command **Use filter...**, you can easily exclude measurements from the list which fulfil certain criteria (e.g. all measurements from a certain test bench). In the same submenu, you find the command **Undo hide**. This makes all excluded measurements visible again.

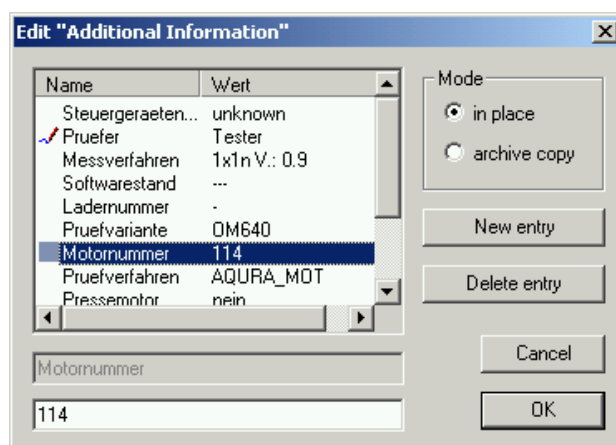
In contrast to that, the menu command **Remove from list** excludes the corresponding measurements completely from the list. If all measurements of a certain archive have been removed, the corresponding archive will be removed from the list of loaded archives as well.

## Working with archives, edit „additional Information“

The submenu **Archive features** holds three important additional commands. **Archive export...** creates a new archive file from the measurements that have been selected in the list. That way you can extract certain single measurements from a large archive or assemble selected measurements into one package.

**Remove from archive(s)** removes the selected measurement(s) from the archive files. The data of deleted measurements are gone forever (in contrast to the menu command **Remove from list**, which removes measurements from the list only, but not from the archive files). Removing a measurement from an archive does not make the archive smaller immediately, the archive file contains holes instead. Select the corresponding archive file in the section **Archive** and press **Cleanup** to reduce the archive to the data left.

The command **Edit “Additional infos”** allows to edit the “additional information” section of the selected measurement. Clicking on the menu command opens an edit dialog:



This dialog lists all additional information stored for the selected measurement. If you click on an entry in the list, it appears in the text field below (like the „Motornummer: 114“ in the figure). You can change the value (here: „114“) there. After a change, a marking appears in the list in front of the entry (like with „Pruefer“ in the figure).



Basically, there are two possible ways to change data: Either „in place“ or by making a copy of the archive. „In place“ means, that the change will be done in the current archive file. This is obly possible when you change an entry to a shorter or at most as long value. (For example, you could change an entry of 114 to 115, but not to 1145.) If you want to add characters to an entry, you must do this in a copy of the archive. In the top right corner, below **Mode** switch to **archive copy**. In an archive copy, you can add new entries (further additional information) either. If you leave the dialog by clicking **OK**, you will be asked for the name of the archive copy to store the data.

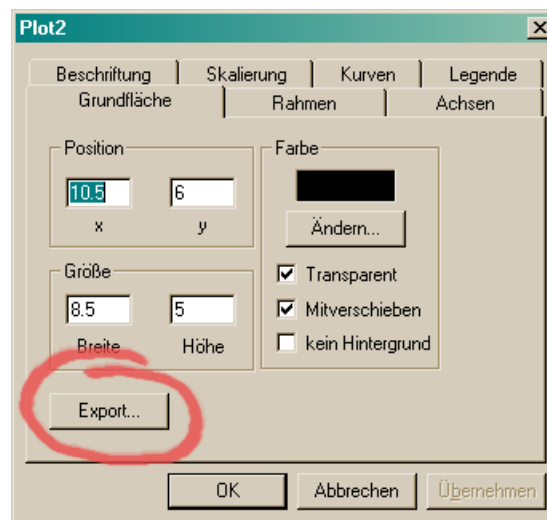
---

## Exporting Data

There are two possibilities to export data from the evaluation program: You can export the presentation graphics (as a graphic) or the curve data (in excel format).

### Exporting Graphics

If you want to export a graphic, double-click on the graphic object that you want to export. The property dialog of the graphic module will be opened:



In the tab section **Position/Size** of this dialog, you find the button **Export...** Execute the graphic export by pressing this button.

The graphic will be stored in “WMF“-format. You can import these graphics for example in a word document, or them send via email.

Further details about exporting graphic you will find in the manual about the presentation display.

### Excel-Export

If you want to export the curve data themselves, select the corresponding data entry in the contents tree (see figure on page 18) and open the context menu. You will find the menu item **Excel-Export...** there. If you select that item, you will then be asked for a filename to store the exported data.

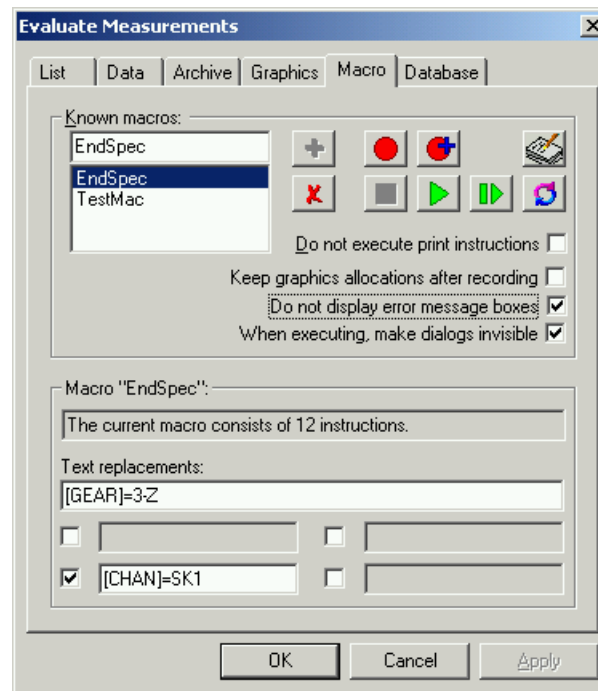
The data will be stored in an excel sheet (in the „csv“-Format), with the first column containing the positions on the x-axis and all other columns containing

the corresponding values of the curves. We encourage to create a separate excel worksheet for further processing. In that evaluation sheet you can place additional fields, calculations or graphics and copy the exported data from the excel sheet to the evaluation worksheet.

---





# Macros

A macro allows to store actions you are executing while using the presentation manually (selecting data entries, assigning graphics, etc.) and make them repeatable by that. A macro is recorded and can be played back including additional parameters. These actions are controlled in the section **Macro** of the control dialog:



## Make a Macro and Use It

Proceed as follows to record a macro:

1. Enter a new name in the field below **known macros** and click on the button **New** . (If you want to re-record an existing macro, this step is skipped.)
2. Select the name of the new rapport in the list and press **Record** . (If you re-record an existing rapport, a warning message is being displayed.)
3. Now execute the actions you want to record: Assign graphic modules to data entries and let the data be displayed. At the end, you can print the corresponding page(s) from the section graphic (see “Printing Graphics” on page 26). You should also include „Erase“-commands at a suitable moment.
4. Return to the section **Macro** and press **Stop** . The recording is complete.
5. If you select the macro in the list now and press **Play** , you can watch how the macro is being processed.

The macro executes exactly those operations you recorded. If you load another archive file and process your macro, the new data will be displayed exactly in the same way like that with which you recorded the macro.

## Using Replacement Rules

In the lower part you can define replacement rules for the macro commands. That way you use a macro which you recorded for SK1 for SK2 as well. Enter the replacement rules in the form

“oldText1=newText1,oldText2=newText2,...“. Everything left of a sign of equality is being replaced by that standing on the right. Avoid spaces, except you want them to be part of the replacement text.

You can use several fields to enter replacement rules. Each field can contain several replacements. You can enable or disable the four fields and the rules defined within by clicking the control boxes.

You normally use the replacement rules as follows: After recording a macro (either manually or using the macro editor, see below), replace all actual references (e.g. referencing the test bench) by a symbolic name (maybe „[TestBench]“). That way, the modified macro is not usable any more without replacement rules. But afterwards, the replacement rules have a readable form „[TestBench]=MyTestBench“.

## Options when Processing a Macro

During the recording or the processing of a macro, you may not want that pages are being sent to a printer. If you enable the check box **Do not execute print instructions**, nothing will be printed. Nevertheless, the commands will be recorded (during record), but not executed.



If you start recording or executing a macro, all existing graphic assignments are removed at first. Then the assignments of the macro are recorded or made when you process a macro. At the end, these assignments are removed and the previously defined assignments re-installed. If you do not want the assignments made by the macro be removed, enable **Keep graphics allocations after recording**. You can continue to work with the assignments, then.

When executing a macro, errors can occur, for example if a requested data entry is not present in the loaded archive. Think of a test bench where gearboxes are tested which can have either 5 or 6 gears. Your macro is designed to display all 6 gears, when measured. Error messages naturally occur, when you measured a gearbox having only 5 gears. Since these error messages are normally displayed in message dialogs, they can be annoying in the context explained above. Activate the check box **Do not display error message boxes** to disable dialog messages. Still, the error messages are reported in the Stdout-window.


As mentioned above, all actions which have been carried out when recording the macro, are executed when processing it. This includes selecting entries in the contents tree and in the graphic assignment dialog, pressing buttons and similar actions. These actions, which are originally designed for manual usage take much time when processed in a macro. Enable **When executing make dialogs invisible** to save skip these actions and save time.


## Add Commands to a Macro

If you want to add new commands to an existing macro, proceed as follows:

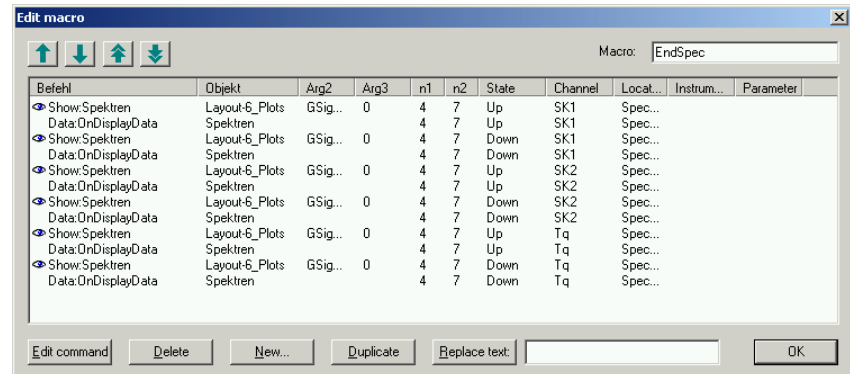
Select the macro in the list and press the button . Execute the additional commands as if you were doing a normal macro recording. These commands are added at the end of the macro. Press Stop  to end the recording.

## Editing Macros

Macros are stored in a separate file (a resource sea) which is normally stored in the same folder as the application sea and named `Rapports.sea`. You can have several such sea files, containing different macros. Switch between sea files with the button .

You can easily edit a macro with the macro editor. Select the macro you want to edit in the list and press .

The macro editor lists all commands of the macro:



Select a command. Use the arrow buttons above the list to move the command one position to the top or to the bottom. The buttons with the double arrows move the command to the top or to the end of the list.



The buttons below the list allow to edit commands. You can change a command, delete it, insert a new command or copy an existing command. Furthermore, you can replace text with the button **Replace Text**. Be aware that the text replacement is done for the whole macro (and not for the selected command, only).

### *The Structure of a Macro Command*

As you can guess from the editor dialor, a macro command consists of the following elements:

**Command:** the command itself. In general, a colon separates the general part from the particular part of the command. For example: The command „Layouts:OnWipe“ shows that this command generally deals with layouts, and in particular “wipes” a page.

**Object:** This is the main parameter of the command. The object of the command „Layouts:OnWipe“, for example, is the (Instance-)Name of the Layout-Page, which shall be wiped. The parameter ‚Objekt‘ is a text parameter. Commands which require numerical parameters use the command elements **num1** and **num2** (see below).

**Arg2, Arg3:** The parameteres are additional text parameters. Their meaning depend on the command as is with all parameters.

**num1, num2** (labeled **n1** and **n2** in the dialog): numerical integer values.

**Mode, channel, location, instrument, parameter:** these five texts form a so called „Quinter“. Every measurement data entry is identified definitely by a

quinter. Thus, every command addressing data for display, requires a quinter to define the data.

If you double click on a command in the macro editor (or if you create a new command), the command edit dialog is opened:



This dialog displays all elements of a command. Some parameters are dispensable with certain commands and remain empty, then (or have the value 0 like with num1 and num2).

See „Details of Certain Commands“ for further information about different macro commands and their parameters.

## Macros in the Sea

You can open and edit the macro sea with any text editor (e.g. notepad). It consists of a resource list „Rapports“ at the beginning, containing all valid macros of this macro file. Each line in the list defines one macro. Each line consists of two entries: The user name of the macro and the “internal name” of the macro. The internal name is created by replacing all special characters (like ‘!’ or ‘-’) by numerical codes.

Each name defines a resource list, containing the macro commands and the entries „(Name)\_Status“ and „(Name)\_Optionen“.

The resource list contains the commands in the same form as they are displayed in the window of the macro editor (see figure above). One line defines one command, beginning with the command itself, followed by the parameters. Unused (empty) parameters within the parameter list are indicated by a comma. They can be skipped at the end of a command:

```
Layouts:OnWipe Curves , , 0 0
Data:OnOptions , , , 3 0
Show:Curves Layout-Curves GSigCurvePlot5 0 4 8 1.M [Chan] N-Mon
Show:Curves Layout-Curves GSigCurvePlot6 0 4 8 1.M [Chan] M-Mon
"Show:General Information" Layout-Curves BottomText0 0 3 5
// "Dies ist ein Kommentar." , , 0 0
Call:MTest [Mode]=5.N , , 0 0
Layouts:DisplayText Layout-Curves TextArea0 "Channel: [Chan]" 0 0
```

Parameter-Values (and Commands) containing spaces must be framed by quotation marks. (e.g. like in "Show:General Data" in line 5 or "Channel: [Chan]" in the last line.)

You can obviously edit a macro by editing the command list in the macro sea. But you can carry out such actions only when the presentation program *is not running*, since the presentation program stores its memory copy of the macro

sea when you end the program. All manual changes in the macro sea will get overwritten then.

Please notice: The single comma is the fill-in character for an empty parameter text. It is *not* used to separate the single parameters (unlike some programming languages do when calling a function).

### **Details of Certain Commands**

General remark: Many macro commands exist in an english and a german version. If you enter commands manually with the macro editor, it is irrelevant which version you use. The executed action is the same with both command versions.

If you record a macro, commands are always recorded in the system's language. If you use an english Windows system, english commands will be recorded; if you use a german system, german commands will be recorded.

#### **Show data**

The most frequent action in a macro is displaying data in a graphic object. This function is called with the Show-command, which has the following structure (example parameters)

Show:Curves Layout-Curves GSigCurvePlot5 0 4 8 1.M [Chan] N-Mon
---

You create a show command when you record a macro. It has the following structure, in detail:

Behind the colon, you find the „chapter“ from the contents tree holding the requested data. The other parameters have the following meaning:

Objekt = Instance name of the Layout, Arg2 = Instance name of the graphic module to display the data. (For more details about instance names see "Names and Instance Names" on page 28.)

Arg3 = Color (color-Index).

Num1 and Num2 encode the branch of the contents tree. The best way to get the adequate values is by recording a show command.

Quinter = exact position of the data item (branch in the tree).

The Show-command is an abbreviation for four separate commands:

Daten:OnGraphAuswahl, GraphMod:OnHinzunehmen, GraphMod:OnApply and Daten:OnDatenAnzeigen. If you record a macro, you will see these commands in the macro editor at first. Only when the macro is stored, the four commands are compacted to the Show command.

If you don't record the exact structure of the four commands (e.g. by pressing GraphMod:OnHinzunehmen twice in order to display the data in two graphic modules simultaneously) the automatic compaction which creates the show-command does not work.

Data:OnOptions or Daten:OnOptionen: This command sets option of the tab section data (Show Limits, show only marked, etc.). You get the right values for num1 and num2 by recording this command.

Data:OnGraphSelect or Daten:OnGraphAuswahl: Selection of a data entry in the contents tree. The following commands assign graphic modules to it. Normally compacted to the Show command.

Data:OnDisplayData or Daten:OnDatenAnzeigen: Selection of a data entry in the contents tree in order to display its data. (This command has the same

function as the Display button in the tab section data). This command is also compacted to the Show command, normally.

Data:OnWipeTable or Daten:OnTafelWischen: Selection of a data entry in the contents tree in order to delete its data from all assigned graphic modules. This command is rarely used in macros. More you use the corresponding command to delete data from a layout page (see below).

### Commands assigning graphics

GraphMod:OnShowIn or GraphMod:OnHinzunehmen: This command assigns the data entry which you defined with the command Daten:OnGraphAuswahl before to a graphic module. The parameter *Objekt* refers to the instance name of the layout, *Arg2* refers to the instance name of the graphic module. If you want to display the data of a data entry in more than one graphic module at the same time, you can execute GraphMod:OnHinzunehmen more than once.

GraphMod:OnApply and GraphMod:OnOK: With these commands, the graphic assignment is ended. The parameter *Num1* defines the color index which is used to display the data. OnApply leaves the graphic selection dialog open, OnOK closes it.

### Commands for the layout page

The following five commands need surely not be described more detailedly:

<u>Layouts:OnForeground</u>	"6 Plots"
<u>Layouts:OnClose</u>	"6 Plots"
<u>Layouts:OnWipe</u>	"6 Plots"
<u>Layouts:OnPrint</u>	"6 Plots"
<u>Layouts:OnPrintAll</u>	JobTitle

As an alternative, the german version follows:

<u>Layouts:OnVordergrund</u>	"6 Plots"
<u>Layouts:OnSchliessen</u>	"6 Plots"
<u>Layouts:OnWischen</u>	"6 Plots"
<u>Layouts:OnDrucken</u>	"6 Plots"
<u>Layouts:OnAlleDrucken</u>	Drucktitel

The first command brings the layout page to the front. the second one closes it. The third one deletes all data from on that page. The fourth command prints that page. The parameter *Object* is the name (user name) of the layout page.

OnPrintAll prints all open layout pages. The parameter *object* defines the name of the print job. This name is normally irrelevant for the printer. Only when you use a pseudo-printer which produces files (e.g. PDF-Writer or Acrobat Distiller), the print job defines the name of the file which is created. If you enter the special value [AutoTitle] (including brackets), the name is built automatically from the serial number and the time stamp of the first measurement from the list.

The command Layouts:DisplayText or Layouts:TextAnzeigen fills a text which is defined in the macro into a textbox. See the following example:

<u>Layouts:DisplayText</u>	Layout-6Plots	TextArea0	"Measurement in [Chan]"	0	0
----------------------------	---------------	-----------	-------------------------	---	---

The parameter *Objekt* defines the *instance* name of the layout. *Arg2* defines the instance name of the text box. *Arg3* defines the text. Since a text mostly contains spaces, it must be framed by quotation marks (like in the example above).

### Commands for archives

Two commands deal with archives: The first one loads an archive, the second one un-loads it.



Archive:LoadArchive or Archive:ArchivLaden loads an archive. Its parameter `Objekt` defines the filename (including full path) of the archive to be loaded. `Arg2` defines an optional appendix which is described below.

Archive:RemoveArchive or Archive:ArchivEntfernen unloads an archive. The parameter `Objekt` once again defines the file name (see above).

The optional appendix of `Archive:ArchivLaden` can only be entered via the macro editor. It can not be recorded. If you load an archive with an optional appendix, the data from this archive are stored in separate chapters in the contents tree which are marked with the appendix either. As a result, you can assign graphic objects to these data independently from data loaded from other archives (without this appendix specified). You can use this command to load an archive containing a reference measurement and display it with a different color than normal data.

### Further commands

The following commands are not creatable via recording. They must be entered manually with the macro editor.

Comments: You can enter comment lines in the macro. Each line beginning with two dashes `//` will be regarded as a comment:

```
// "This is a comment."
```

Please note: A comment line is still separated into its parameters. To be sure that words of your comment are not treated as numerical parameters, frame the command with quotation marks as shown in the example above.

Call:Macro-Name: This command executes another macro, defined by the name behind the colon. All replacement rules which are valid when that macro is called, are used for that macro either. You can define additional replacement rules for that macro with the parameter `object`:

```
Call:MTest "[Mode]=5.N"
```

The called macro must be defined in the same macro sea like the calling one.

### Conditional execution

Macros are not a programming language. Thus, they include not all constructs of a real programming language. That means for conditional execution: If the defined condition is not true, the following command will be *skipped*.

All Commands for conditional execution start with `If:` or with `Wenn:`. The definition of the condition follows. If an exclamation mark `!` follows the colon directly, the condition is being negated. (See the examples below).

If:IsEqual Text1 Text2 or Wenn:IstGleich Text1 Text2

If `Text1` equals `Text2` literally, the condition is true and the following command will be executed. This command makes only sense when you use it together with replacements:

```
If:IsEqual [Channel] SK3  
Call:SpecReport3  
If:!IsEqual [Channel] SK3  
Call:SpecReport1
```

The first two commands have the following function: The macro „SpecReport3“ is called if and only if `[Channel]` has got the value „SK3“ from a replacement rule. The next two commands deal with the other case: If `[Channel]` has not got the value „SK3“ (Note the `!` in the command) the macro „SpecReport1“ is called.

### If:Data ... or Wenn:Daten ...

The following parameters of this command are the same as in the show command. The condition is true, when the defined data entry of the contents tree actually contains data:

```
If:Data Spektra - - 0 4 3-Z [Chan]  
Call:SpecReport3
```

These commands execute “SpecReport3” only if the requested data entry contains data. The easiest way to get the parameter list of this command is by recording the following action in a temporary macro: Select the requested data entry in the contents tree, and press “Show in...”. Then stop the recording (without assigning a graphic module). The macro now contains a Data:OnGraphSelect-command having the desired parameter list. You can rename it to „If:Data“, replace parameters by replacement rules, if necessary and finally copy it to the macro where you need it.

### **Further Tricks**

After having executed a macro, you probably want to have measurements marked in the dialog section **List**, or want to execute similar operations where it is relevant which item in the contents tree is currently active (see “The Active Item” on page 22). You can set an item as the active item with the following two commands added at the end of the macro (e.g. with the macro editor). In the example the item “Curves” is set active:

```
Data:OnGraphSelect " Curves" , , 2 21  
GraphMod: OnOK
```

As usual, it is easier to create these commands by recording them in a temporary macro.